

## ABSTRACT

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A technique for electrically mounting a surface-normal optical device or material on a waveguide-type optical device while the characteristics of the mounted device are effectively used is disclosed. The waveguide-type optical device comprises a substrate on which optical waveguides or fibers are provided and a trench is formed; a pair of electrodes which is assigned to each optical waveguide or fiber and is formed from the surface of the substrate to wall surfaces of the trench; and a material or device which is filled or inserted into the trench, and which has an electro-optic effect, thermo-optic effect, light emitting function, light receiving function, or light modulating function. Another type of device comprises a thin and surface-normal active optical device driven by an applied voltage, which is substantially vertically inserted into the trench and is fixed in the trench; and a support member attached to the inserted device.